

Effects of kenaf bast fibres on hydration behaviour of cement

ABSTRACT

The compatibility between cement and kenaf bast fibre and its improvement with various types of accelerators were investigated by observation and analysis on hydration behaviour in terms of hydration characteristics, namely, maximum hydration temperature and required time to reach maximum temperature. Five extraction methods (crude, water retting, decortication, NaOH retting and benzoate retting), four accelerators (CaCl_2 , AlCl_3 , Na_2SO_4 , CaO), three concentrations (2, 4 and 6%) and three particle sizes (0.5, 0.8 and 4.0 mm) were used. The hydration behaviour of mixtures demonstrated that NaOH and benzoate were unsuitable with cement. Meanwhile, CaCl_2 and CaO were found to be effective accelerators for restraining inhibitory influences. In addition, 2% accelerator was available and acceptable for quick-curing cement. Particle sizes of 0.5 and 0.8 mm required addition of accelerators to reach maximum cement setting.

Keyword: Accelerators; Cement hydration reaction; Particle size